

Aging and the future of the Finnish population

Statistical Days 2011: Population: Migration and Aging
May 30-31, 2011, University of Helsinki

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Statistics Finland – Population statistics – Demographics

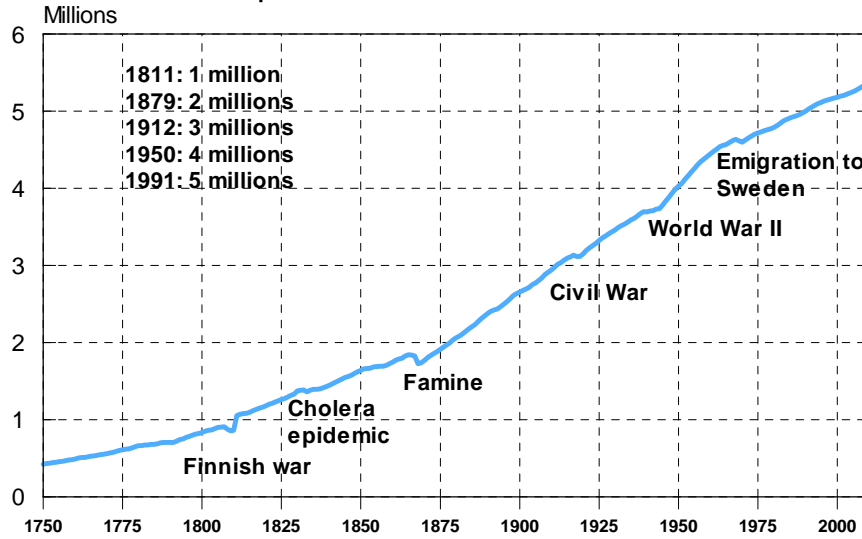
In my presentation

- Few details about history of population of Finland
- Aging population of Finland
- Nature of population projection and assumptions
- Future of Finnish population
- Projections made in the past
 - observations



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Population of Finland 1750–2010

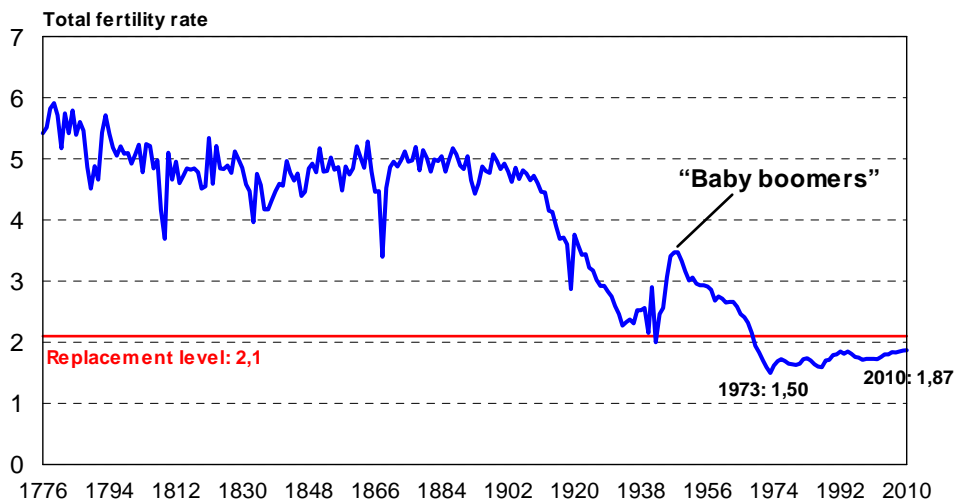


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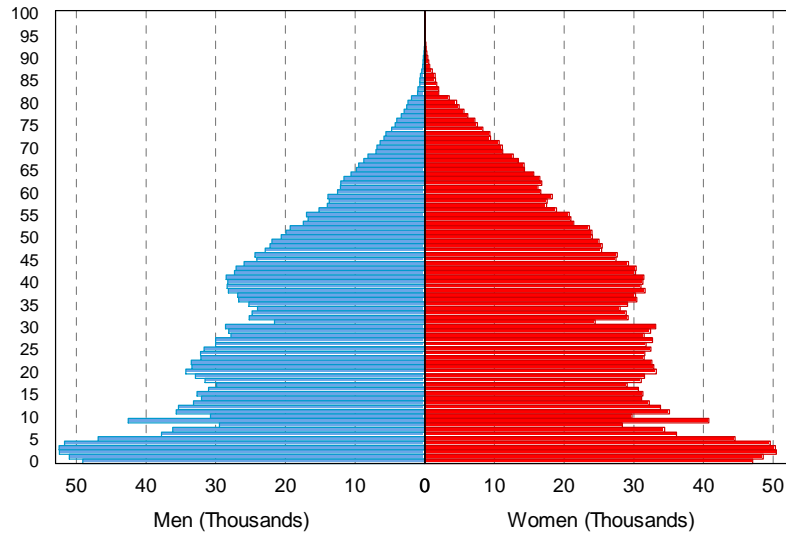
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Total fertility rate in Finland 1776–2010

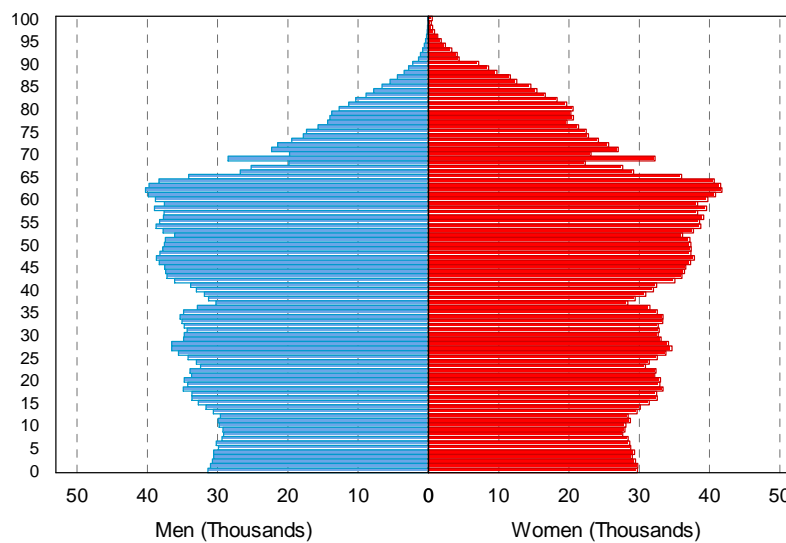


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Age structure of population 1950



Age structure of population 2010



We live "historical times" in population history of Finland

- Fertility is highest in 40 years time
- At the same time fertility has been under the replacement level for 40 years
- In 2008 number of elderly (aged 65+) topped the number of young people (under 15) for the first time
- Last four years net migration has been bigger than natural increase

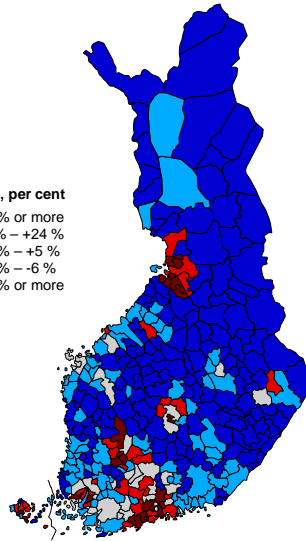
Number of persons aged under 15 in 2010 was the lowest since 1895

- 1896: Population 2.5m and under 15: 894,000 (35.3 %)
- 1959: Population 4.4m and under 15: 1,353,000 (30.7 %)
- 2010: Population 5.4m and under 15: 888,000 (16.5 %)

- 1896: 65 and over 131,000 (5.2 %)
- 1959: 65 and over 319,000 (7.2 %)
- 2005: 65 and over 841,000 (16.0 %)
- 2010: 65 and over 941,000 (17.5 %)
- April 2011: 65 and over 954,000 (17.7 %)

Change in number of persons aged under 15 by municipality 1990–2009

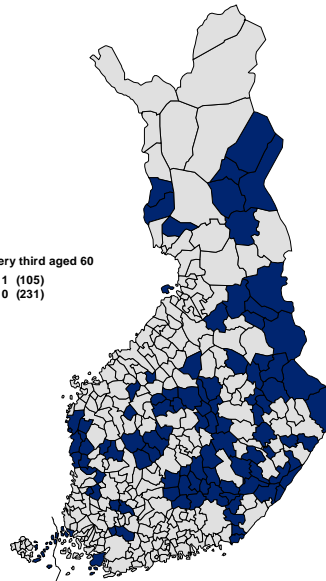
Change, per cent
 ■ +25 % or more
 ■ +6 % – +24 %
 ■ -5 % – +5 %
 ■ -24 % – -6 %
 ■ -25 % or more



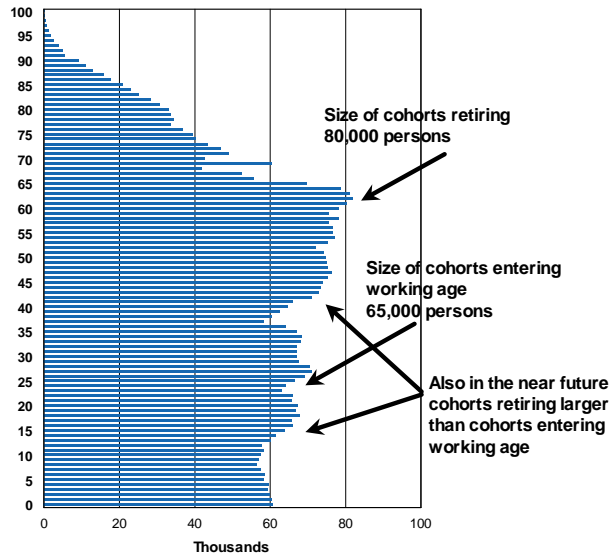
Source: Statistics Finland – Demographics
 Regional division 1.1.2010 – 342 municipalities

Municipalities with at least every third person is aged 60 or more in 2010

Every third aged 60
 ■ 1 (105)
 ■ 0 (231)



Population by age 2010



Nature of population projection made by Statistics Finland

- Population projection should not be considered to show unavoidable future
- Growth/Decline of population will not stay constant for decades
- On a long-term there are many many uncertainties
 - Migration, War, Epidemic

Nature of population projection made by Statistics Finland (cont.)

- Office of the Council of State stated in 1973:
"Rules of population projections"
 - Population projections are based only on demographic components - **fertility, mortality, migration** –
 - Observed trend in the past
 - Does not include any political target setting
- Projection's task is to show what kind of population growth/decline is expected, if trends in the past would prevail unchanged also in the future

Nature of population projection made by Statistics Finland (cont.)

- Offers policy-makers a change to react
- If the future of population (e.g. age structure) is not desired, policy-makers should take actions
- Projection that has been "forced to fall", has performed it's task as a tool for policy-making

Population projection 2009–2060 assumptions

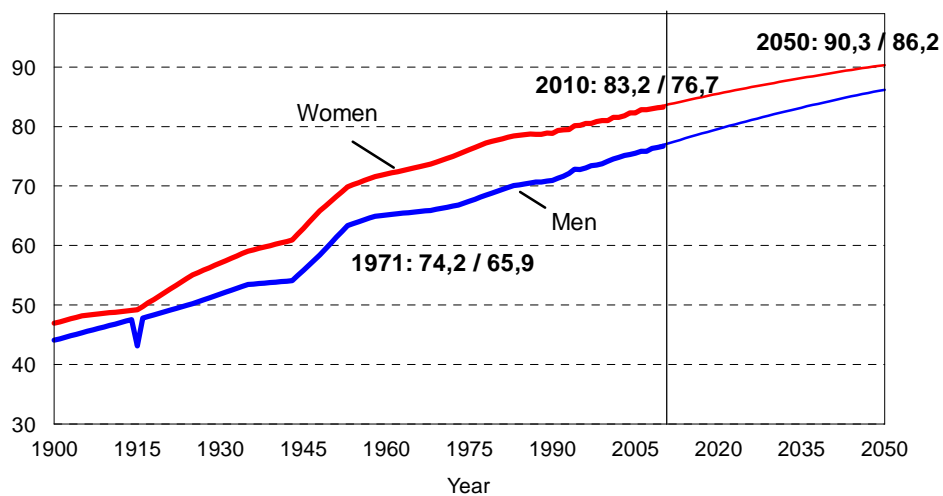
- TFR 1,85 (observed 2008)
 - Constant over projection period

- Net migration 15,000 persons per year
 - Age structure of in-migrants constant (2004–2008)

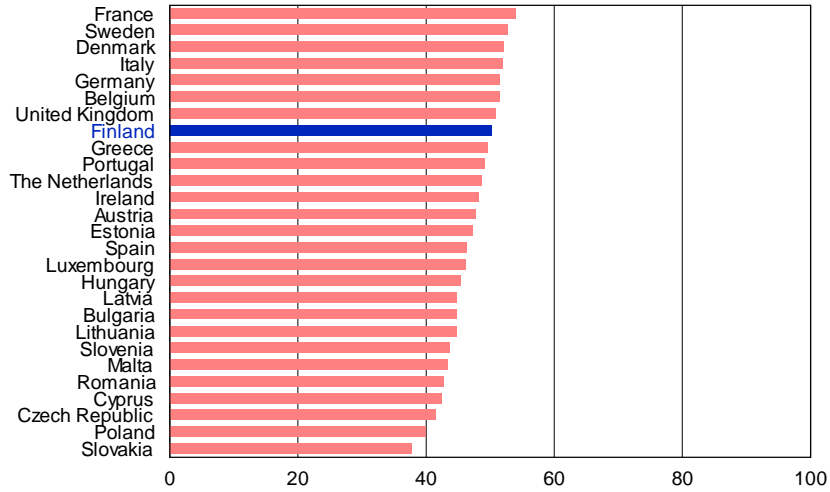
- Mortality is assumed to decline as it has been observed to decline in different ages from period 1989–1993 to 2004–2008

- Group of experts

Life expectancy at birth 1900-2010 and projected 2011–2050

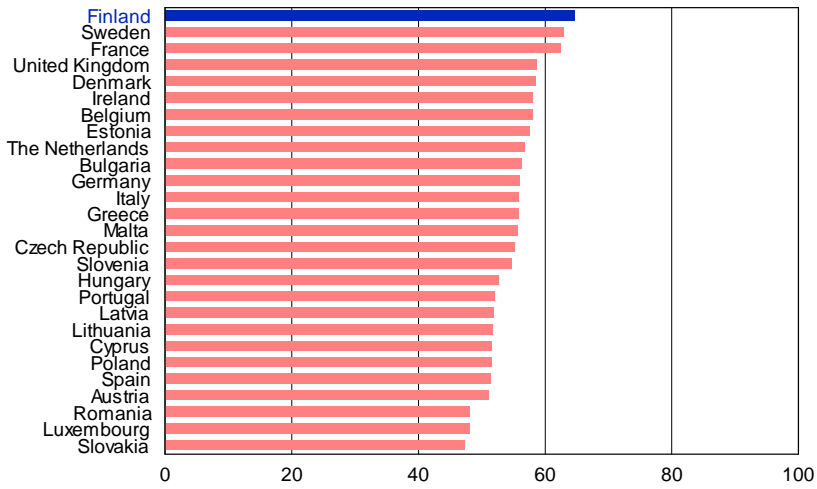


Dependency ratio in EU27 in 2009



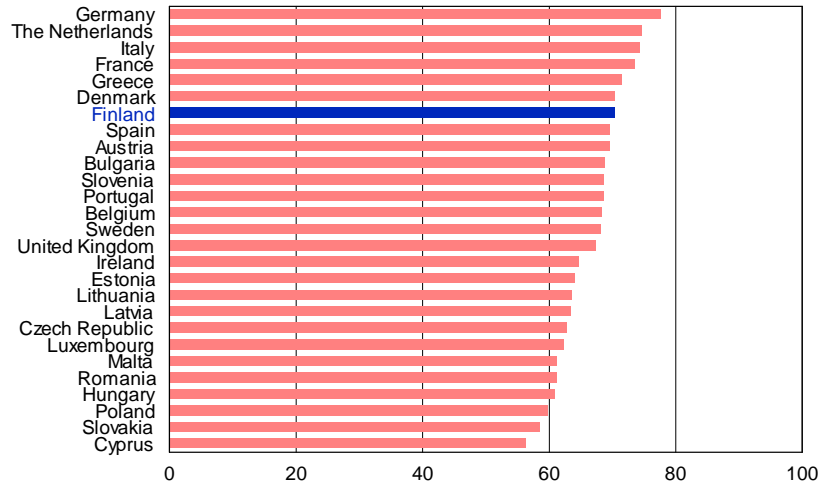
Source: Eurostat

Dependency ratio in EU27 in 2020, projected



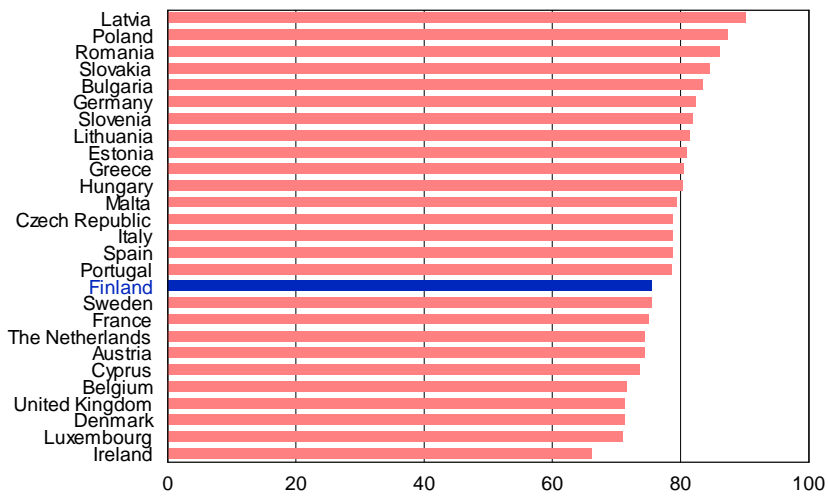
Source: Eurostat

Dependency ratio in EU27 in 2040, projected



Source: Eurostat

Dependency ratio in EU27 in 2060



Source: Eurostat

Number of elderly will rise in the future

■ Aged 65 and over Share of total population

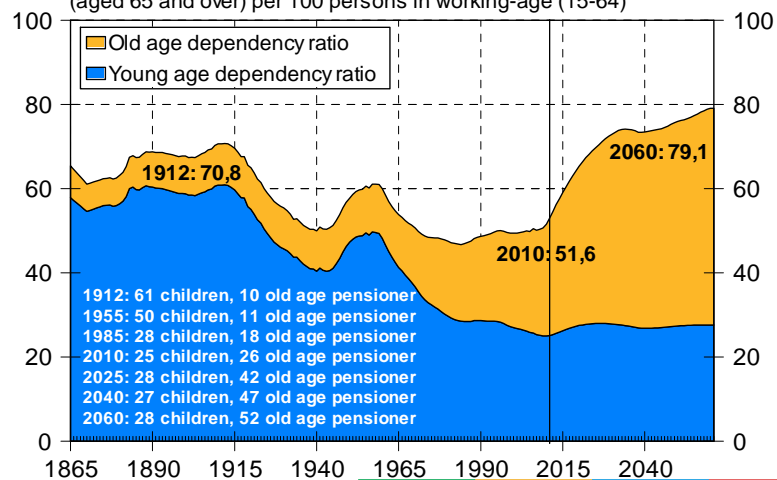
| | | |
|---------|-----------|----------|
| • 2010: | 941,000 | (17.5 %) |
| • 2020: | 1,290,000 | (22.9 %) |
| • 2030: | 1,525,000 | (26.1 %) |
| • 2040: | 1,608,000 | (26.9 %) |
| • 2050: | 1,681,000 | (27.6 %) |
| • 2060: | 1,770,000 | (28.8 %) |

■ Aged 85 and over

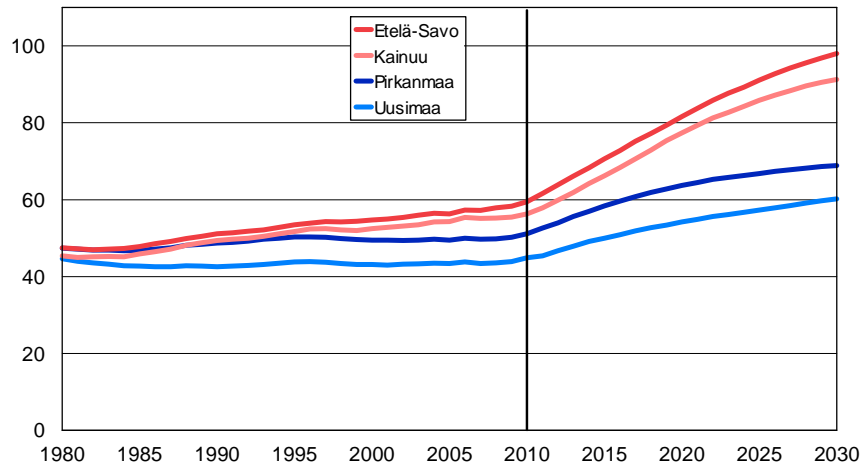
| | | | | |
|----------------|---|---------------------------------|---|---------------|
| • 1980: 28,000 | → | 2010: 114,000 | → | 2040: 392,000 |
| • | | Osuus väestöstä 2.0 % ==> 6.5 % | | |

Dependency ratio in Finland 1865-2010 and projected 2011–2060

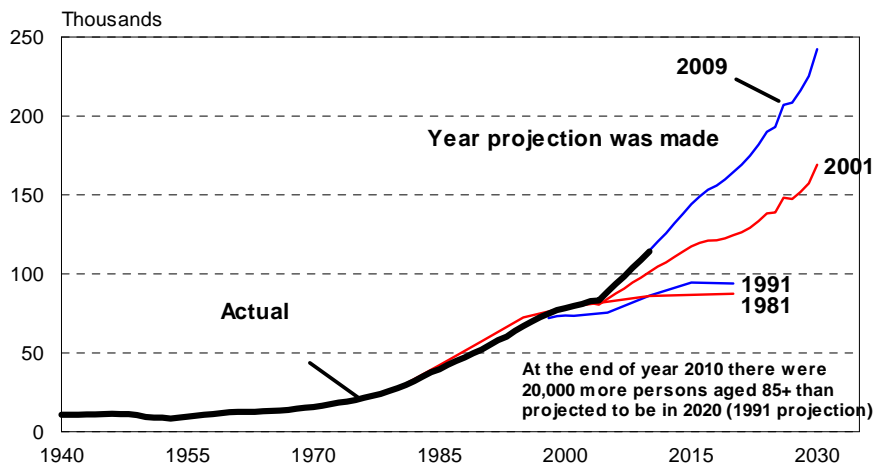
Number of children (age under 15) and persons in retirement age (aged 65 and over) per 100 persons in working-age (15-64)



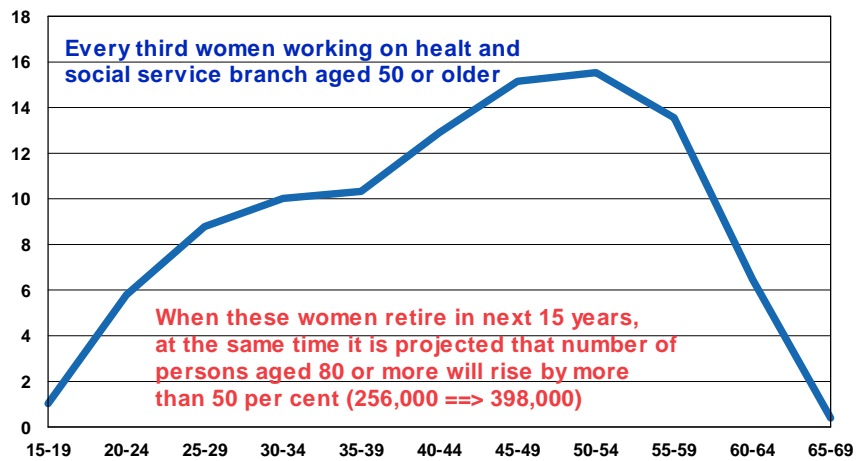
Dependency ratio in 1980–2010 and projected 2011–2030



Number of persons aged 85 and over Actual 1940–2010 and projected in different projections



Age structure of women working on healthcare and social service branch 2008



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Working-age population – sustainability gap?

- Working-age population (aged 15–64) declines (compared to number of working-age population in 2010)
 - By the year 2015: 84,000 persons less than in 2010
 - By the year 2020: 138,000 persons less than in 2010
 - By the year 2025: 157,000 persons less than in 2010
 - By the year 2030: 164,000 persons less than in 2010
 - By the year 2040: 96,000 persons less than in 2010
 - By the year 2050: 86,000 persons less than in 2010

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Working-age population – sustainability? (cont.)

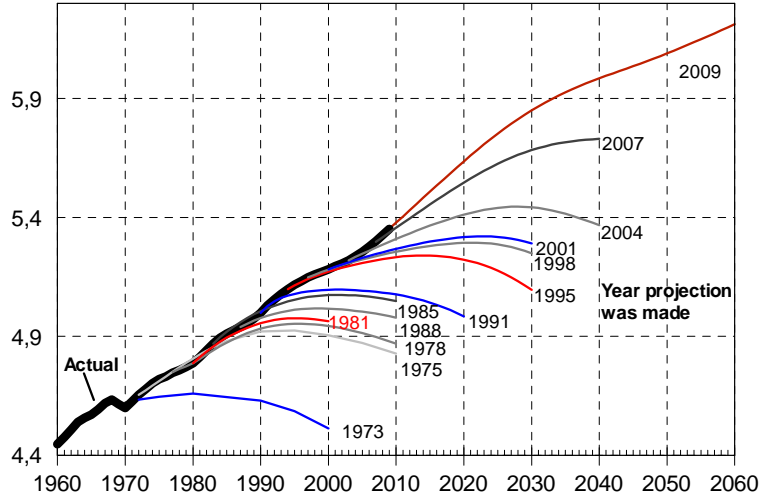
- Working-age population (aged 20–59) declines
 - By the year 2015: 23,000 persons less than in 2010
 - By the year 2020: 58,000 persons less than in 2010
 - By the year 2025: 94,000 persons less than in 2010
 - By the year 2030: 88,000 persons less than in 2010
 - By the year 2040: 23,000 persons less than in 2010
 - By the year 2050: 17,000 persons less than in 2010
- No-migration scenario:
 - By the year 2030: 424,000 persons less than in 2010
- 2004: All time highest (2.9 million)
- In 2004–2010: Decline has already been 87,000 persons!

Population projections in the past have failed

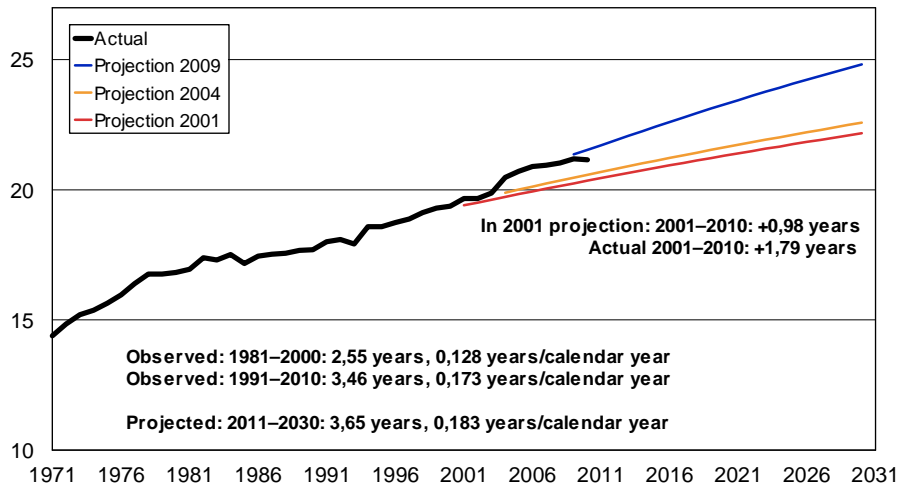
- Mortality assumptions have been pessimistic (badly!)
- Net migration has increased even in Finland
 - Population at the end-of-year 2010 bigger than it ever was projected to be in 2001 projection (2001–2030)

Projection history of Statistics Finland

Total population
Million persons

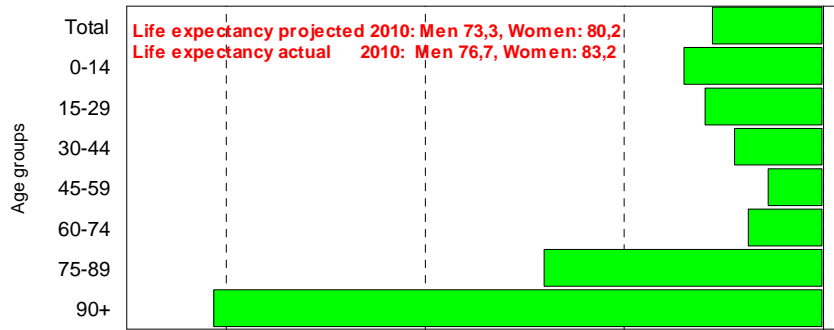


Life expectancy for women aged 65 Actual 1971–2010 and projected in 2001, 2004 and 2009



Projected (1991) population 2010 vs. actual 2010

Error (%) by age at the end-of-year 2010



| | Total | 0-14 | 15-29 | 30-44 | 45-59 | 60-74 | 75-89 | 90+ |
|------------------|---------|--------|---------|---------|---------|--------|--------|--------|
| Actual | 5375276 | 887677 | 1005927 | 1002877 | 1136042 | 907204 | 401246 | 34303 |
| Projected | 5076065 | 825456 | 946199 | 958115 | 1104577 | 872959 | 344960 | 23799 |
| error / persons | -299211 | -62221 | -59728 | -44762 | -31465 | -34245 | -56286 | -10504 |
| error / per cent | -5,57 | -7,01 | -5,94 | -4,46 | -2,77 | -3,77 | -14,03 | -30,62 |

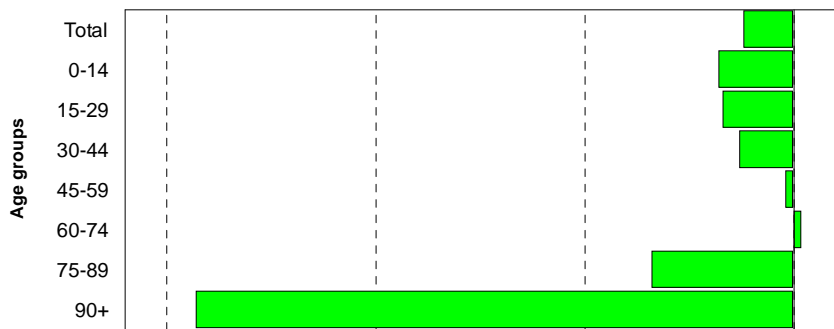
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Projected (2004) population 2010 vs. actual 2010

Error (%) by age at the end-of-year 2010



| | Total | 0-14 | 15-29 | 30-44 | 45-59 | 60-74 | 75-89 | 90+ |
|------------------|---------|--------|---------|---------|---------|--------|--------|-------|
| Actual | 5375276 | 887677 | 1005927 | 1002877 | 1136042 | 907204 | 401246 | 34303 |
| Projected | 5309656 | 871527 | 988689 | 989602 | 1133484 | 909231 | 387732 | 29391 |
| error / persons | -65620 | -16150 | -17238 | -13275 | -2558 | 2027 | -13514 | -4912 |
| error / per cent | -1,2 | -1,8 | -1,7 | -1,3 | -0,2 | 0,2 | -3,4 | -14,3 |

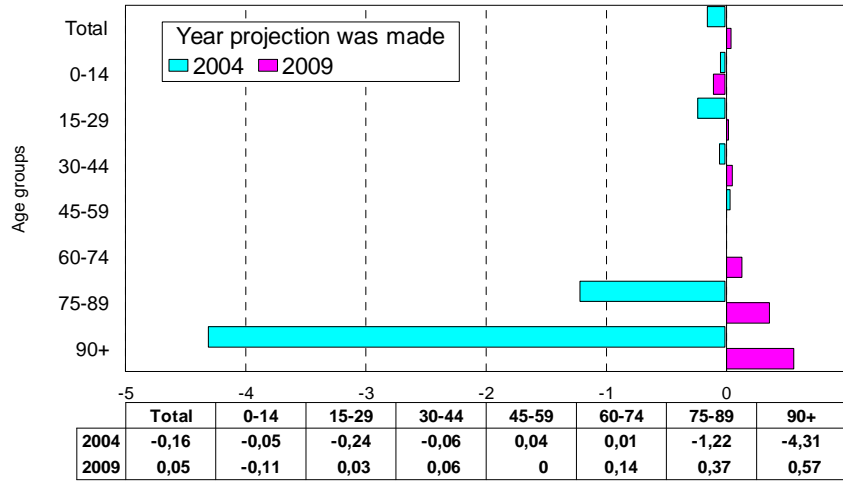
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Projection error of projections 2004 and 2009 after second projection year

Error (%) by age at the end of second projection year



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Number of deaths in 2009–2010

- Projection system preserves
 - Projected births by age of the mother
 - Projected deaths by age and gender

■ NUMBER OF DEATHS in 2009–2010

| ● Age group | Observed | Projected | Diff. | % |
|-------------|----------|-----------|-------|------|
| ● 75-84 | 29,354 | 28,482 | -872 | -3.0 |
| ● 85-94 | 29,322 | 28,652 | -670 | -2.3 |
| ● 95+ | 5,154 | 5,154 | 0 | 0.0 |

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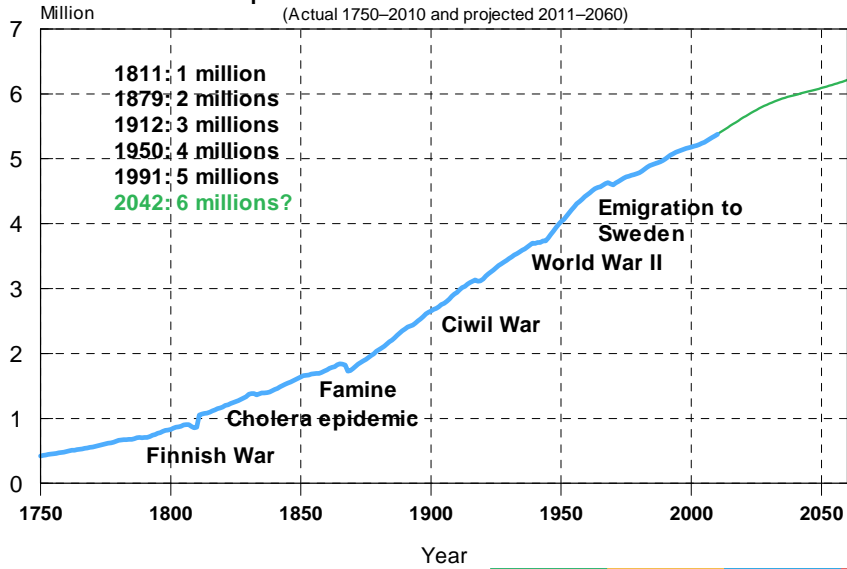
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Population of Finland 1750–2060

(Actual 1750–2010 and projected 2011–2060)



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THANK YOU!

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